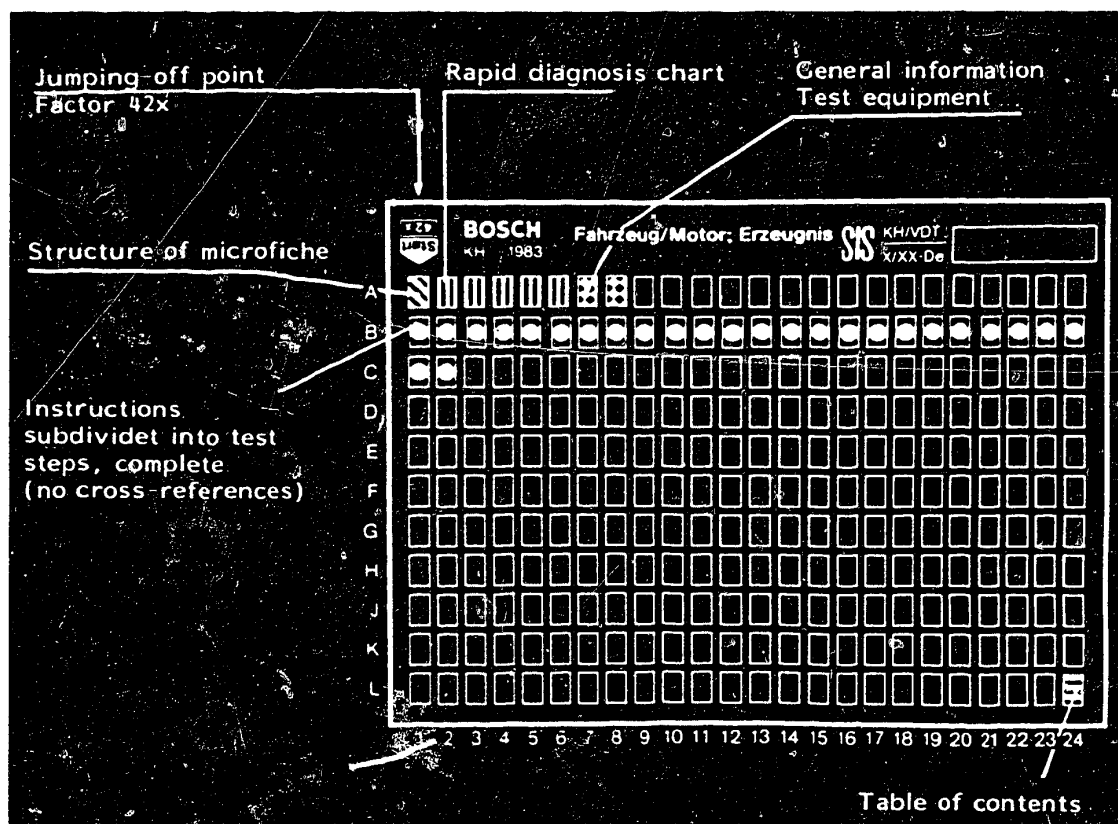


Structure of microfiche



1. Read from left to right

2. Title of microfiche (appears on each coordinate)

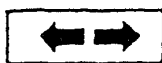
E 16	Product/assembly/test step	
	Vehicle/engine	

Coordinate

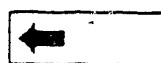
3. Limits of section



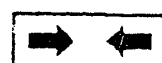
Beginning



Mid-section



End



One-page section

4. References to relevant test steps in test specifications; coordinate e.g. C6

C 6

A1

Testing and adjustment



1) Rapid diagnosis chart for headlight vertical aim control (LWR)

For the sake of improved clarity, the following rapid diagnosis chart has been subdivided into testing for truck tractors (A3/A4) and testing for commercial vehicles (A5/A6). The chart makes it possible for the experienced expert to test the headlight vertical aim control system using headlight aiming device

0 681 130 .. or 0 684 100 ...

The contents of this chart are restricted to the following:

- Sequence of test steps
- Setting instructions and test specifications (readings on headlight aiming device. For truck tractors the setting values are given separately for each headlight aiming device).
- References to coordinates of the respective detailed testing and trouble-shooting programm.

If detailed information and instructions are required, always proceed according to the test and adjustment section starting on Coordinate B 1 (Testing of truck tractors) or starting on B 18 (testing of commercial vehicles).

Before testing, make sure of the following:

- Tyre pressures O.K.
- Vehicle ready for the road and unladen (in accordance with StVZO* § 42 Sect. 3)
- Lower beam switched on
- Headlight aiming device set up in accordance with operating instructions.

Tests and adjustment operations must always be carried out on both headlights.

* StVZO = FMVSS (in USA), CUR (in GB)



Rapid diagnosis chart for testing of IVECO truck tractors

Perform tests on both headlamps in each case

Test step	Set manual adjuster on commercial vehicle to:	Set headlight aiming device to:	Set headlamps to:	Reading on headlight aiming device:	Co-ordinates
Headlight aiming device 0 681 130 ..					
1	0 all the way to the right	13 cm inclination	Light/dark boundary		B 2
2	4/4 all the way to the left	Light/dark boundary		Between 51 and 61 cm	B 4
3	0 all the way to the right	13 cm inclination	Light/dark boundary		B 8
Headlight aiming device 0 684 100 ..					
1a	0 all the way to the right	13 cm inclination	Light/dark boundary		B 10
2a	3/4	Light/dark boundary		Between 39 and 49 cm	B 12
3a	0 all the way to the right	13 cm inclination	Light/dark boundary		B 16

A3

Rapid diagnosis chart
IVECO headlight vertical aim control



A4

Rapid diagnosis chart
IVECO headlight vertical aim control



Rapid diagnosis chart for testing of IVECO commercial vehicles

Perform tests on both headlamps in each case

Test step	Set manual adjuster on commercial vehicle to:	Set headlight aiming device to:	Set headlamps to:	Reading on headlight aiming device:	Co-ordinates
1	0 - 1/2 all the way to the right	13 cm inclination	Light/dark boundary		B 19
2	1/2 - 4/4 all the way to the left	Light/dark boundary		between 33 and 43 cm	B 21
3	0 - 1/2 all the way to the right	13 cm inclination	Light/dark boundary		C 1

A5

Rapid diagnosis chart

IVECO headlight vertical aim control



A6

Rapid diagnosis chart

IVECO headlight vertical aim control



2) General

Since April 1981 IVECO commercial vehicles (road vehicles over 16 t with leaf springs) have been equipped with a hydromechanical headlight vertical aim control (headlight vertical aim control system). The headlight vertical aim control system consists of manual adjuster, actuators and hoses. The manual adjuster is under the instrument panel. Headlight vertical aim control system 0 307 550 908 is installed in IVECO truck tractors, and headlight vertical aim control system 0 307 550 909 is installed in IVECO commercial vehicles.

In test step 3 the basic setting of the headlights is carried out.

Note: The basic setting refers to the regulations in Germany.

In countries outside Germany the local regulations should be observed.



3. Test equipment

Headlight aiming device
or

0 681 130 ...

Headlight aiming device

0 684 100 ...



4. Testing and repairing IVECO truck tractors

* For IVECO truck tractors testing and repairing is dealt with separately for headlight aiming devices 0 681 130.. and 0 648 100 .. since different values must be set.

Make sure of the following before testing the headlight vertical aim control system:

- Tyre pressure O.K.
- Vehicle ready for the road and unladen (in accordance with StVZO* § 42 Sect. 3)
- Lower beam switched on
- Headlight aiming device set up in accordance with operating instructions

The tests and adjustment operations must be carried out on both headlamps.

Notes

With the detailed testing and trouble-shooting starting on Coordinate B 1, go through the test steps one after the other.

Continue with the trouble-shooting given underneath the test steps only if there is a fault.

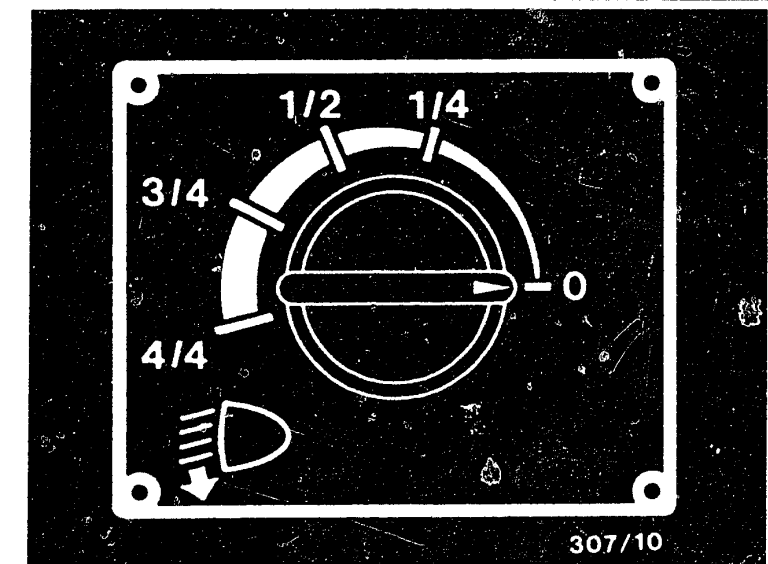
*StVZO = FMVSS (in USA), CUR (in GB)

B1

• Testing and reapairing
IVECO headlight vertical aim control



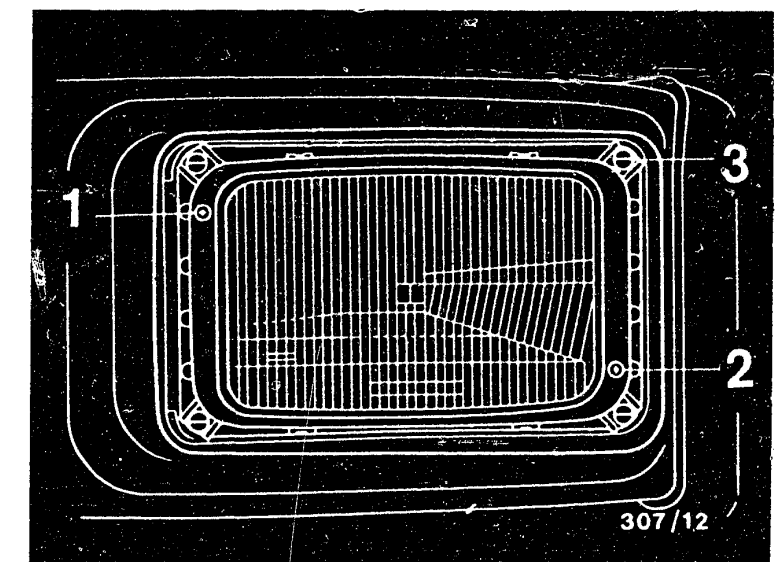
Test step 1		
Operation	Reading	Testing
<u>Measuring equipment:</u> Headlight aiming device 0 681 130 ..		<u>Component:</u> Headlamp
<u>Operation in vehicle:</u> Manual adjustment device to position : 0 (all the way to the right)		<u>Operation:</u> Correct adjustment
<u>Setting on headlight aiming device:</u> Set headlight aiming device to 13 cm inclination		<u>Malfunction:</u> Headlamp not mechanically adjustable
<u>Operation in vehicle:</u> Set headlights to light/dark boundary (bottom illustration)		



Manual adjuster

Adjusting screws on headlamp

- 1 = Horizontal adjustment
- 2 = Vertical adjustment
- 3 = Fastening screws of headlight unit



Headlamp not mechanically adjustable:

Check headlamp for damage and replace if necessary.

B2

Testing and repair

IVECO headlight vertical aim control



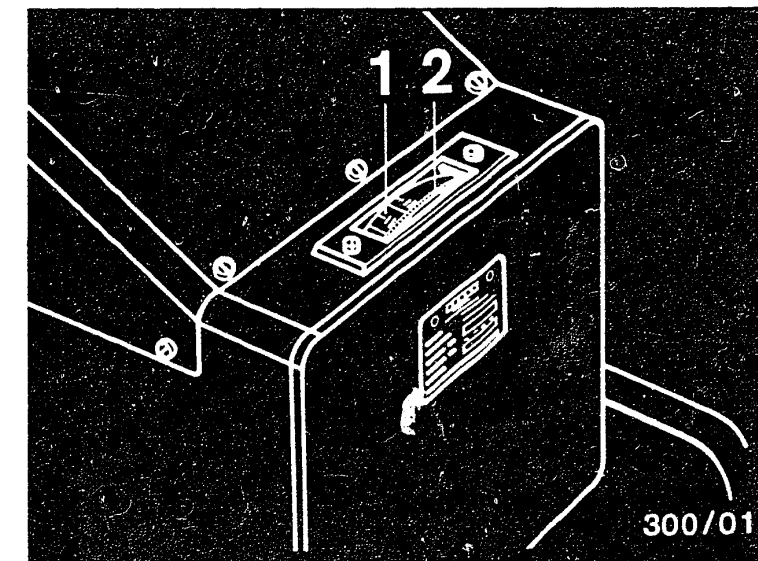
B3

Testing and reappear

IVECO headlight vertical aim control



Test step 2		
Operation	Reading	Testing
<u>Measuring equipment:</u> Headlight aiming device 0 681 130 .. (see picture)	On headlight aiming device: Light/dark boundary between 51 and 61 cm inclination	<u>Component:</u> LWR system Downward adjustment
<u>Operation in vehicle:</u> Manual adjustment device to position 4/4 (left-hand stop)		<u>Operation:</u> Adjusting range downward
<u>Setting on headlight aiming device:</u> Set to light/dark boundary		<u>Malfunction:</u> Values not reached



- 1 = Setting scale
2 = Knurled disc or knob for setting inclination

Headlight adjustment only partially present

Check reflectors for freedom of movement. Test stroke of control elements.



Continued on B6/B7

B4

Testing and repair

IVECO headlight vertical aim control



B5

Testing and repair

IVECO headlight vertical aim control



Trouble-shooting if headlight adjustment only partially present:

1. Test reflectors for freedom of movement

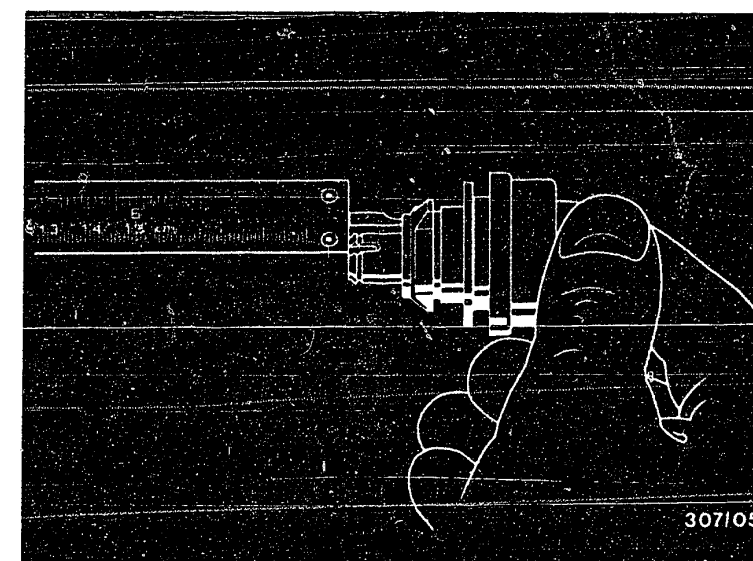
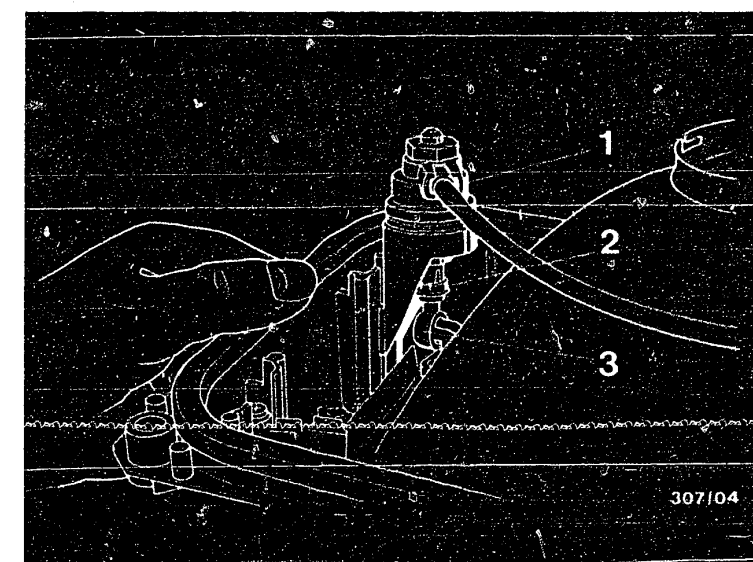
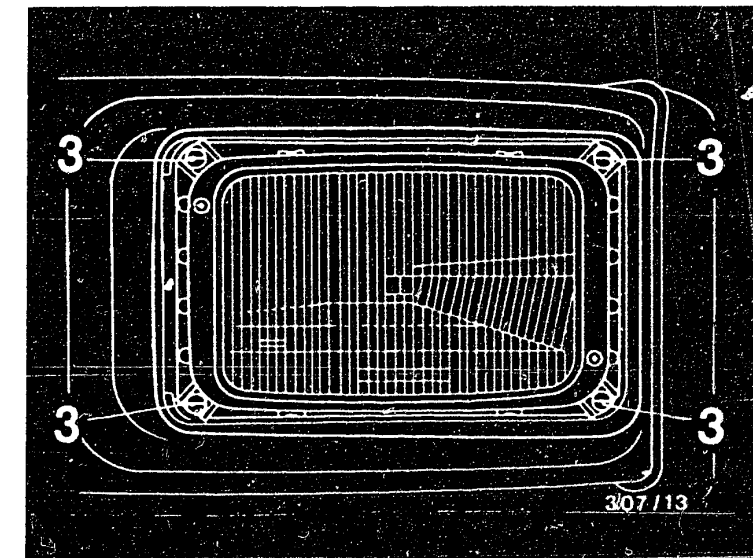
To do this, pull out headlight unit. (Loosen fastening screws (3), top picture). Force the retainer (2) (centre illustration) away from the control element (1) toward the reflector. Using a screwdriver, unhook the spacer pin (3) from the control element. The control element (1) is fastened on the holder by means of a bayonet lock. Move the reflector by hand and check for freedom of movement (must not stick).

Test the stroke of the control elements (bottom illustration)

Set knob of manual adjuster to latched position "0" (all the way to the right). Using a caliper gauge, measure projection of piston. Turn knob as far as it will go to the left (4/4) and measure the changed projection dimension. If the difference is less than 4,3 mm the complete manual adjustment system must be replaced.

Note:

Before re-installing the headlamps, fit the spacer pin retainer. If there is no adjustment at all on one or both headlamps, check whether the spacer pin (3) has locked in position in the headlamp holder or control element.



B6

Testing and repair
IVECO headlight vertical aim control



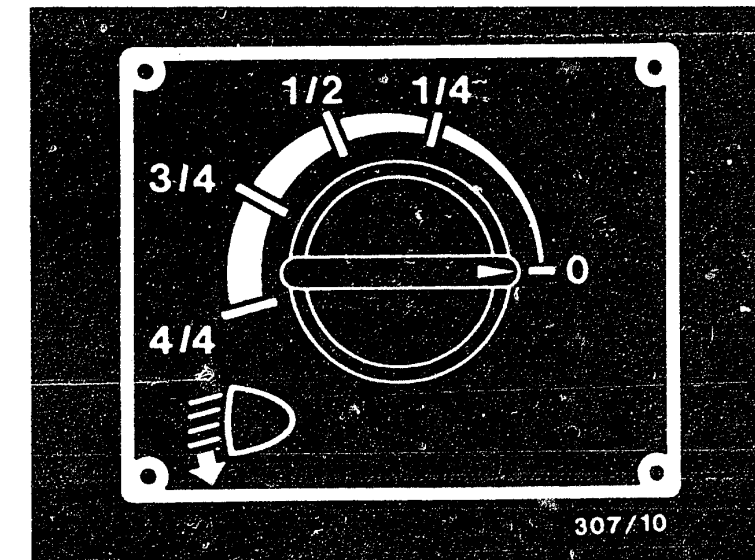
B7

Testing and repair
IVECO headlight vertical aim control



<u>Test step 3</u> <u>Operation</u> <u>Measuring equipment:</u> Headlight aiming device 0 681 130 ..	Reading On headlight aiming device: Light/dark boundary with 13 cm inclination	Testing <u>Component:</u> Headlamp
<u>Operation in vehicle:</u> Manual adjuster at position 0 (all the way to the right - top picture)		<u>Operation:</u> Basic setting
<u>Setting on headlight aiming device:</u> Set to 13 cm inclination		<u>Malfunction:</u> Headlamp not mechanically adjustable
<u>Operation in vehicle:</u> Set headlamp to light/dark boundary (bottom illustration)		

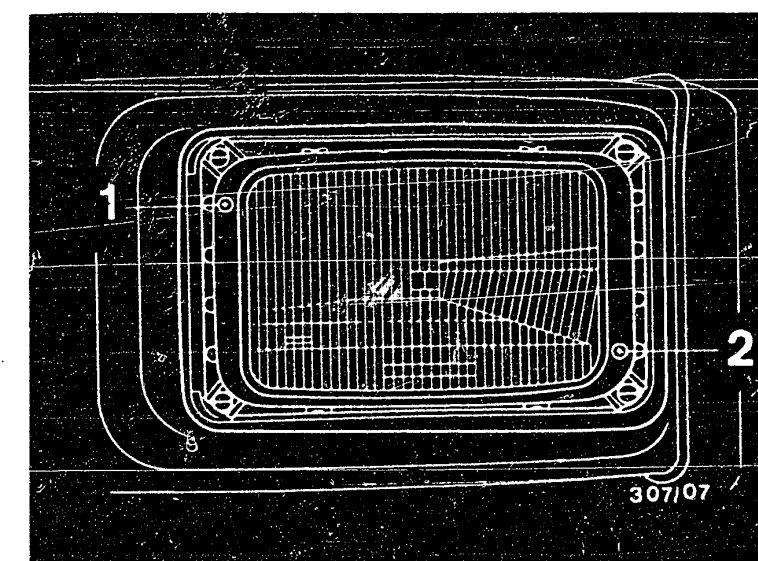
If headlamps set to light/dark boundary, testing is completed.



Manual adjuster

Adjusting screws on headlamp

- 1 = Horizontal adjustment
- 2 = Vertical adjustment



B8

Testing and repair
IVECO headlight vertical aim control



B9

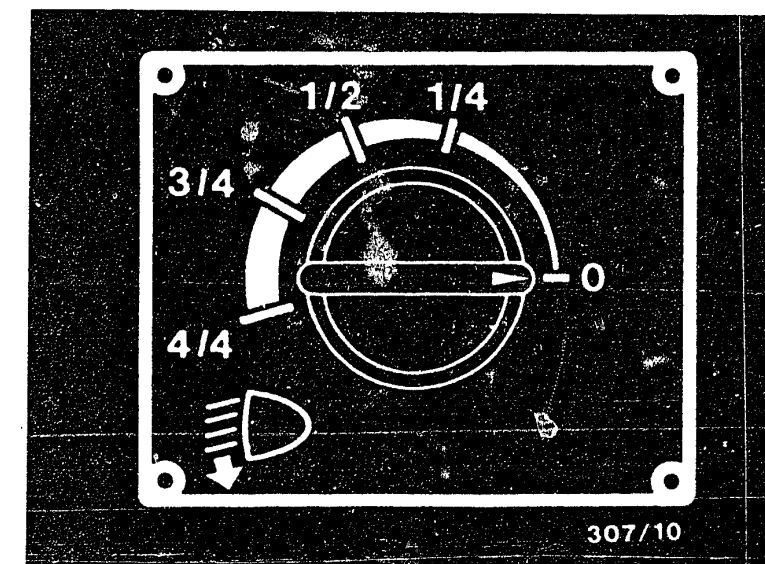
Testing and repair
IVECO headlight vertical aim control



Test step 1a		
Operation	Reading	Testing
<u>Measuring equipment:</u> Headlight aiming device 0 684 100 ..		<u>Component:</u> Headlamp
<u>Operation in vehicle:</u> Manual adjustment device to position 0 (right-hand stop)		<u>Operation:</u> correct setting
<u>Setting on headlight aiming device:</u> Set headlight aiming device to 13 cm inclination		<u>Malfunction:</u> Headlamp not mechanically adjustable
<u>Operation in vehicle:</u> Set headlamp to light/dark boundary (bottom illustration)		

Headlamp not mechanically adjustable:

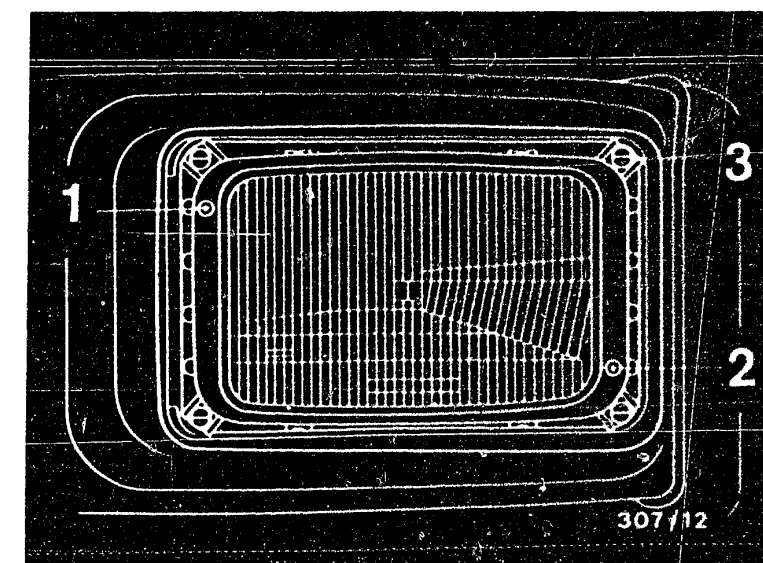
Check headlamp for damage and replace if necessary.



Manual adjuster

Adjusting screws on headlamp

- 1 = Horizontal adjustment
- 2 = Vertical adjustment
- 3 = Fastening screws of headlight unit



B 10

Testing and repair

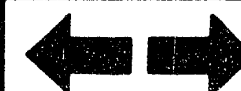
IVECO headlight vertical aim control



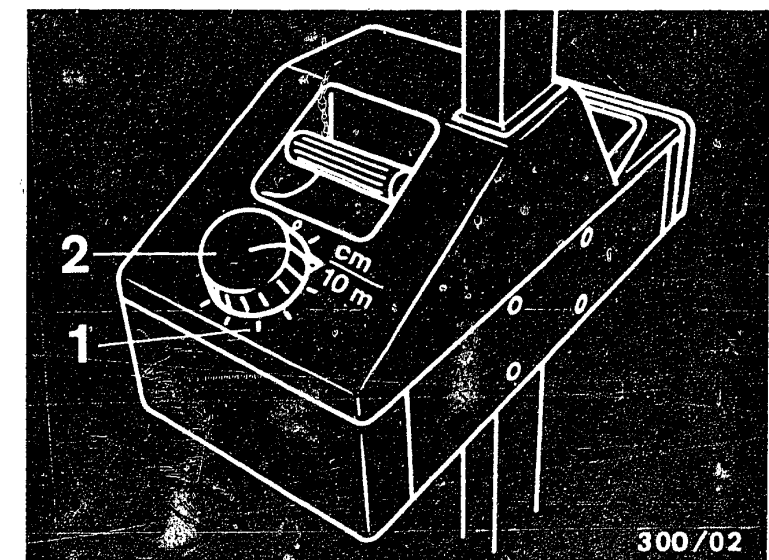
B 11

Testing and repair

IVECO headlight vertical aim control



Test step 2a		
Operation	Reading	Testing
<u>Measuring equipment:</u> Headlight aiming device 0 684 100 .. (picture)	On headlight aiming device: Light/dark boundary between 39 and 49 cm inclination	<u>Component:</u> LWR system Upward adjustment
<u>Operation in vehicle:</u> Manual adjustment device to position 3/4		<u>Operation:</u> Adjusting range downward
<u>Setting on headlight aiming device:</u> Set to light/dark boundary		<u>Malfunction:</u> Values not reached



- 1 = Setting scale
2 = Knurled disc or knob for setting inclination

Headlight adjustment only partially present

Test reflectors for freedom of movement. Test stroke of control elements.

Continued on B14/B15

Trouble-shooting if headlight adjustment only partially present:

1. Test reflectors for freedom of movement

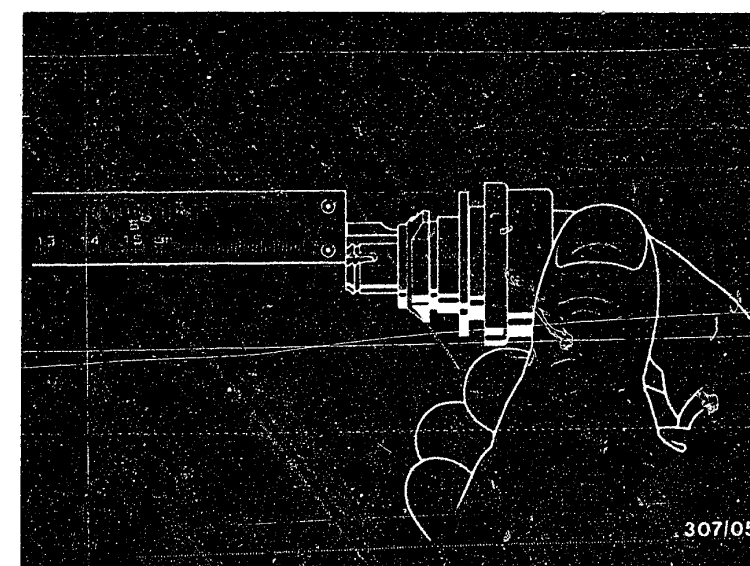
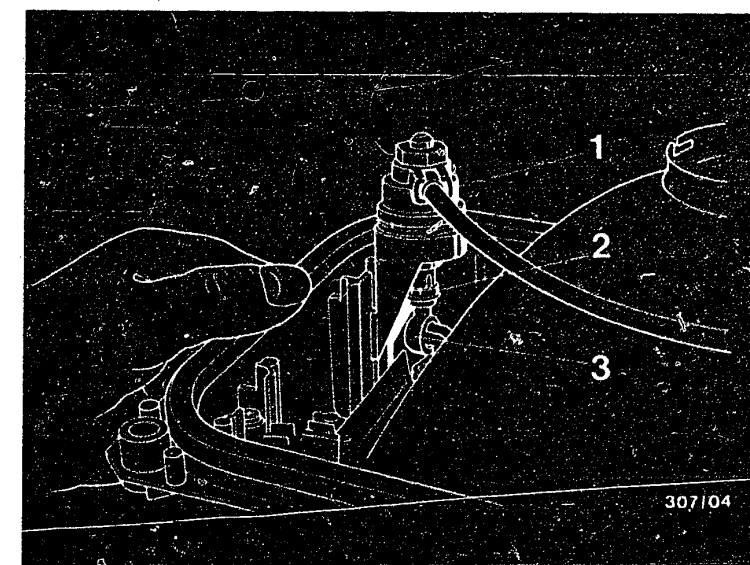
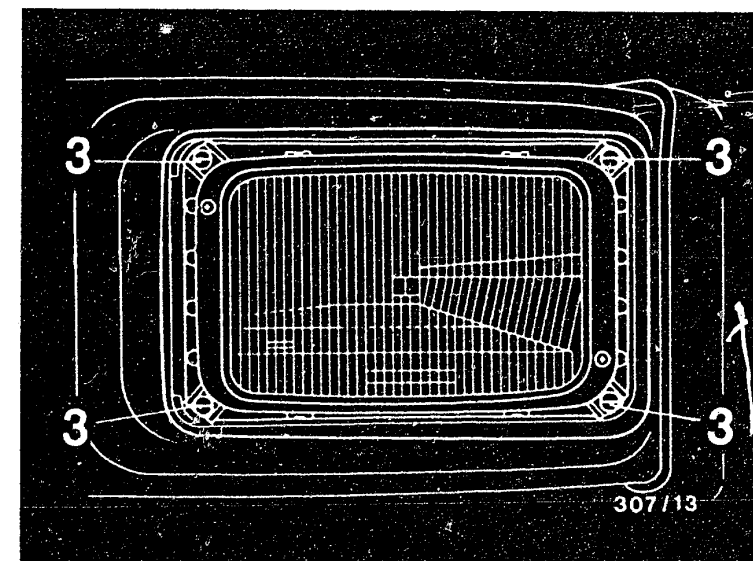
To do this, pull out headlight unit. (Loosen fastening screws (3), top picture). Force the retainer (2) (centre illustration) away from the control element (1) toward the reflector. Using a screwdriver, unhook the spacer pin (3) from the control element. The control element (1) is fastened on the holder by means of a bayonet lock. Move the reflector by hand and check for freedom of movement (must not stick).

Test the stroke of the control elements (bottom illustration)

Set knob of manual adjuster to latched position "0" (all the way to the right). Using a caliper gauge, measure projection of piston. Turn knob as far as it will go to the left (4/4) and measure the changed projection dimension. If the difference is less than 4,3 mm the complete manual adjustment system must be replaced.

Note:

Before re-installing the headlamps, fit the spacer pin retainer. If there is no adjustment at all on one or both headlamps, check whether the spacer pin (3) has locked in position in the headlamp holder or control element.



B14

Testing and repair

IVECO headlight vertical aim control



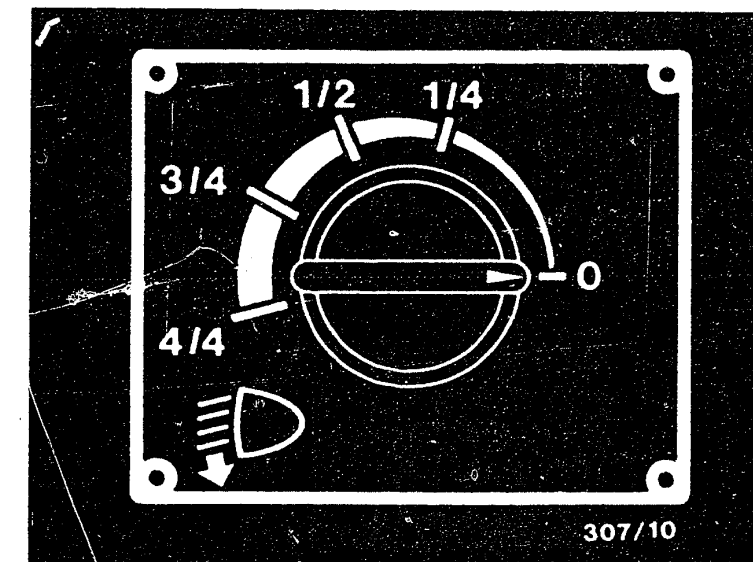
B15

Testing and repair

IVECO headlight vertical aim control

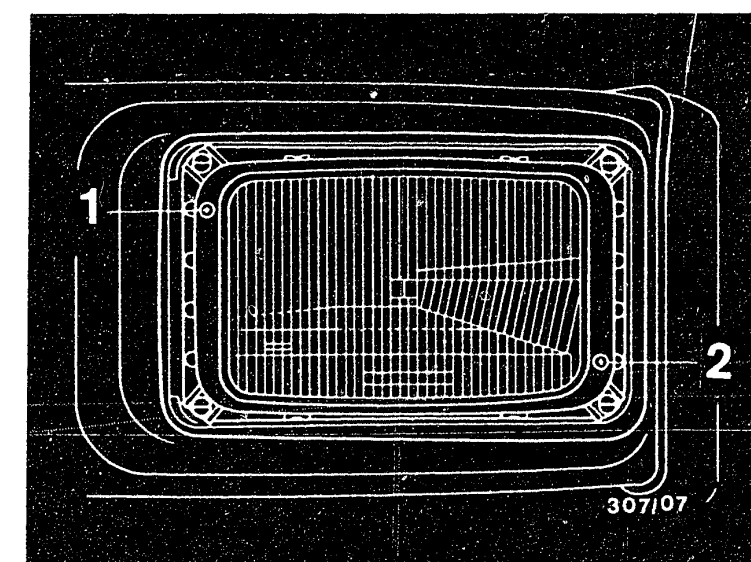


Test step 3a		
Operation	Reading	Testing
<u>Measuring equipment:</u> Headlight aiming device 0 684 100 ..	On headlight aiming device: Light/dark boundary with 13 cm inclination	<u>Component:</u> Headlamp
<u>Operation in vehicle:</u> Manual adjustment device to position 0 (all the way to the right - top picture)		<u>Operation:</u> Basic setting
<u>Setting on headlight aiming device:</u> Set to 13 cm inclination		<u>Malfunction:</u> -----
<u>Operation in vehicle:</u> Set headlamp to light/dark boundary (bottom illustration)		



Manual adjustment device

Adjusting screws on headlamp
1 = Horizontal adjustment
2 = Vertical adjustment



If headlamps set to light/dark boundary, testing is completed.

B 16

Testing and repair
IVECO headlight vertical aim control



B 17

Testing and repair
IVECO headlight vertical aim control



5. Testing and repairing IVECO commercial vehicles
Before testing the LWR system, make sure of the
following:

- Tyre pressure O.K.
- Vehicle ready for the road and unladen (in accordance with StVZO* § 42 Sect. 3)
- Lower beam switched on
- Headlight aiming device set up in accordance with operating instructions

The tests and adjustment operations must be carried out on both headlamps.

Notes

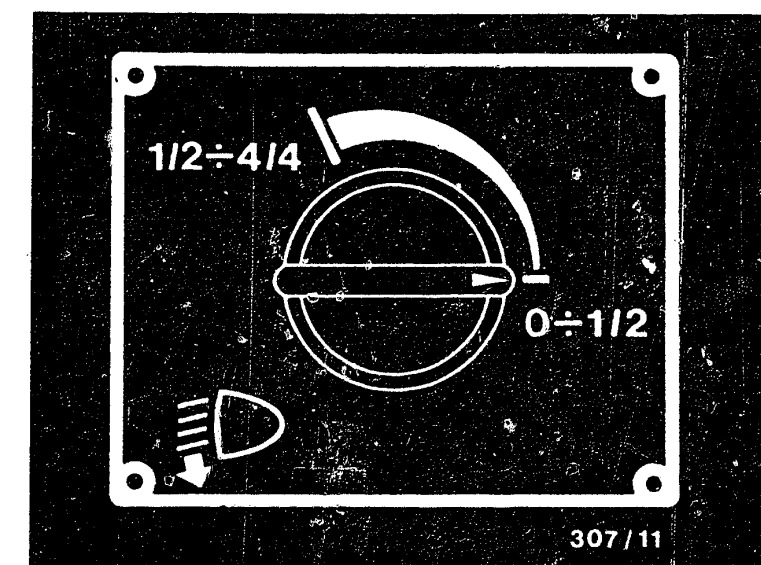
With the detailed testing and trouble-shooting starting on Coordinate B 19, go through the test steps one after the other.

Continue with the trouble-shooting given underneath the test steps only if there is a fault.

*StVZO = FMVSS (in USA), CUR (in GB)



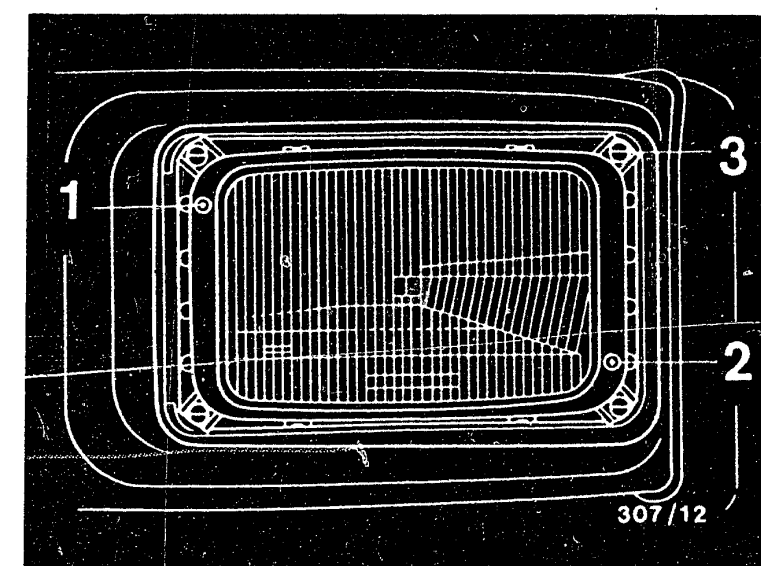
Test step 1		
Operation	Reading	Testing
Measuring equipment:		
Headlight aiming device 0 681 130 .. 0 684 100 ..		Component: Headlamp
Operation in vehicle:		Operation: Correct adjustment
Manual adjustment device to position: $0 \div 1/2$ (all the way to the right)		
Setting on headlight aiming device:		Malfunction: Headlamp not mechanically adjustable
Set headlight aiming device to 13 cm inclination		
Operation in vehicle:		
Set headlights to light/dark boundary (bottom illustration)		



Manual adjuster

Adjusting screws on headlamp

- 1 = Horizontal adjustment
- 2 = Vertical adjustment
- 3 = Fastening screws of headlight unit



Headlamp not mechanically adjustable:

Check headlamp for damage and replace if necessary.

B 19

Testing and repair

IVECO headlight vertical aim control



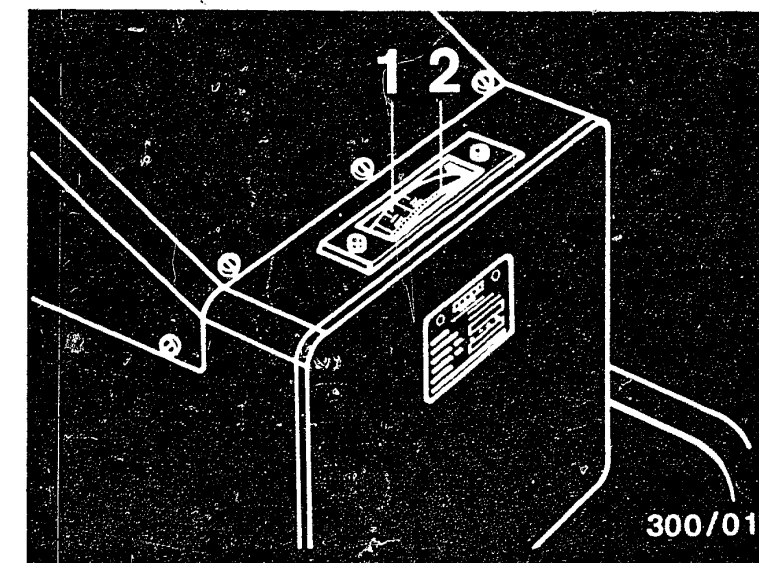
B 20

Testing and repair

IVECO headlight vertical aim control



Test step 2		
Operation	Reading	Testing
<u>Measuring equipment:</u> Headlight aiming device 0 681 130 .. (see picture) 0 684 100 .. (bottom illustration)	On headlight aiming device: Light/dark boundary between 33 and 43 cm inclination	<u>Component:</u> LWR system Downward adjustment
<u>Operation in vehicle:</u> Manual adjustment device to position $1/2 \div 4/4$ (left-hand stop)		<u>Operation:</u> Adjusting range downward
<u>Setting on headlight aiming device:</u> Set to light/dark boundary		<u>Malfunction:</u> Values not reached

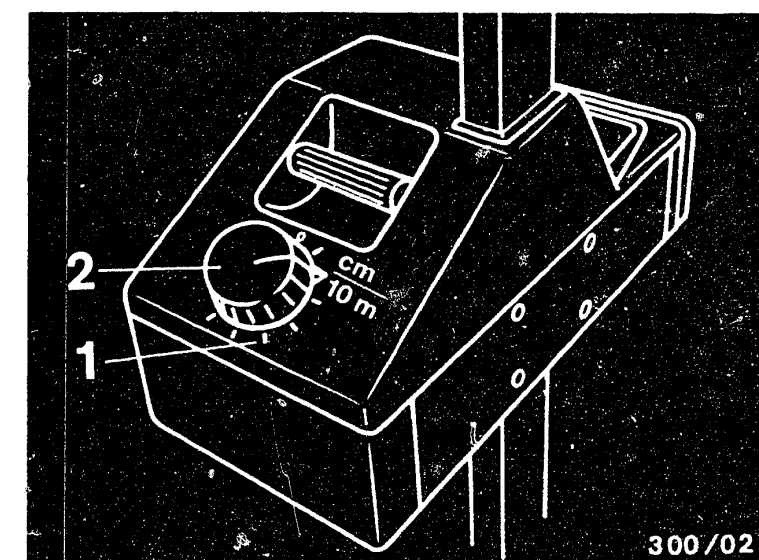


- 1 = Setting scale
2 = Knurled disc or knob
for setting inclination

Headlight adjustment only partially present

Check reflectors for freedom of movement. Test stroke of control elements.

Continued on B23/B24



B21

Testing and repair

IVECO headlight vertical aim control



B22

Testing and repair

IVECO headlight vertical aim control



Trouble-shooting if headlight adjustment only partially present:

1. Test reflectors for freedom of movement

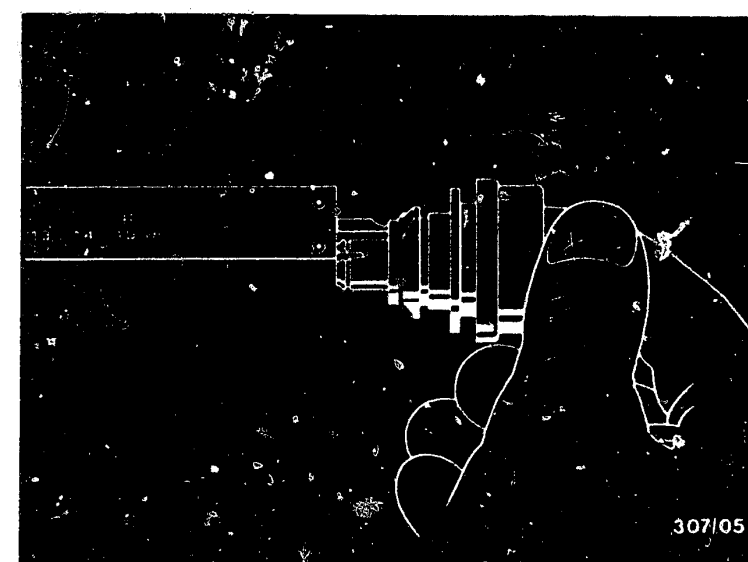
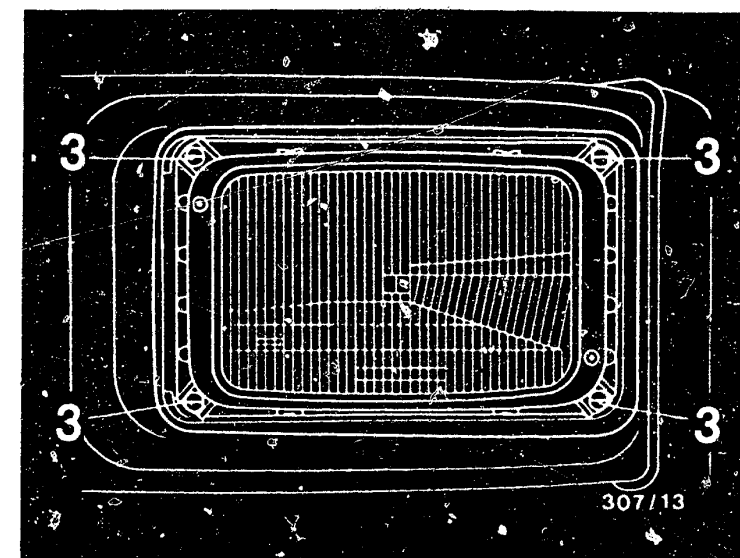
To do this, pull out headlight unit. (Loosen fastening screws (3), top picture). Force the retainer (2) (centre illustration) away from the control element (1) toward the reflector. Using a screwdriver, unhook the spacer pin (3) from the control element. The control element (1) is fastened on the holder by means of a bayonet lock. Move the reflector by hand and check for freedom of movement (must not stick).

Test the stroke of the control elements (bottom illustration)

Set knob of manual adjuster to latched position $0 \div 1/2$ (all the way to the right). Using a caliper gauge, measure projection of piston. Turn knob as far as it will go to the left ($1/2 \div 4/4$) and measure the changed projection dimension. If the difference is less than 2.4 mm the complete manual adjustment system must be replaced.

Note:

Before re-installing the headlamps, fit the spacer pin retainer. If there is no adjustment at all on one or both headlamps, check whether the spacer pin (3) has locked in position in the headlamp holder or control element.

**B23**

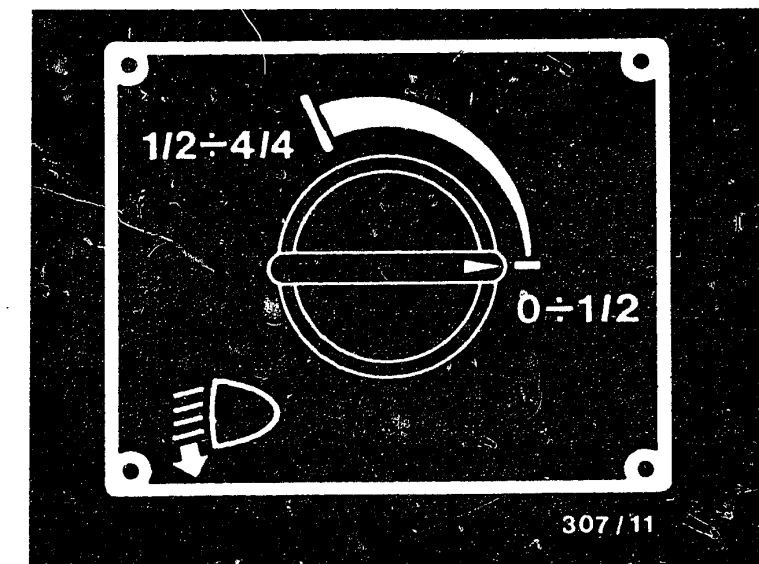
Testing and repair
IVECO headlight vertical aim control

**B24**

Testing and repair
IVECO headlight vertical aim control



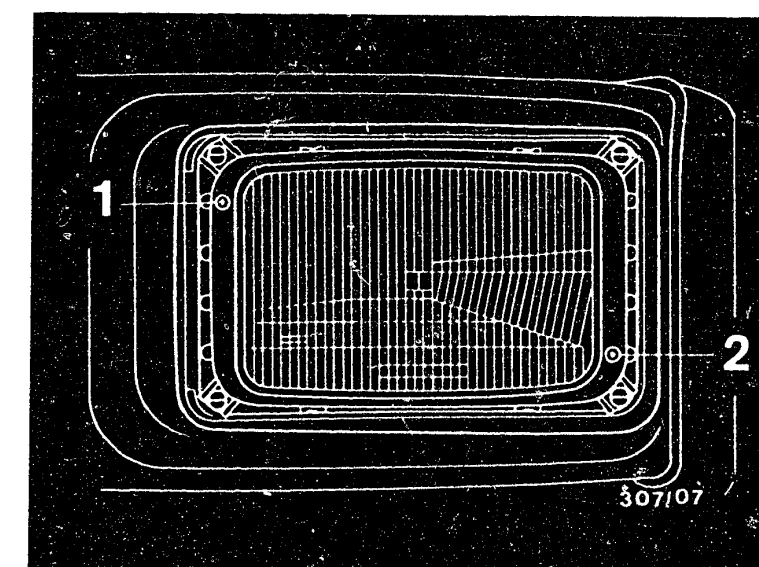
Test step 3		
Operation	Reading	Testing
<u>Measuring equipment:</u> Headlight aiming device 0 681 130 .. 0 684 100 ..	on headlight aiming device: light/dark boundary at 13 cm inclination	<u>Component:</u> Headlamp
<u>Operation in vehicle:</u> Manual adjuster at position 0 - 1/2 (Top picture)		<u>Operation:</u> Basic setting
<u>Setting on headlight aiming device:</u> Set to <u>13 cm</u> inclination		<u>Malfunction:</u> -----
<u>Operation in vehicle:</u> Set headlamps to light/dark boundary (bottom picture)		



Manual adjuster

Adjusting screws on headlamp

1 = Horizontal adjustment
2 = Vertical adjustment



If headlamps set to light/dark boundary, testing is completed.

C1

Testing and repairing
IVECO Headlight vertical aim control



C2

Testing and repairing
IVECO Headlight vertical aim control



Table of contents

<u>Section</u>	<u>Coordinates</u>
Structure of microfiche	A 1
1. Rapid diagnosis chart	A 2
2. General information	A 5
3. Test equipment	A 6
4. Testing and repair - truck tractors	B 1
5. Testing and repair - commercial vehicles .	B18

© 1983 Robert Bosch GmbH
Automotive Equipment - After-Sales Service,
Department for Technical Publications KH/VDT,
Postfach 50, D-7000 Stuttgart 1

Published by: After-Sales Service, Department for
Training and Technology (KH)VSK). Press date: 7.1983

Please direct questions and comments concerning the
contents to our authorized representative in your
country.

This publication is only for the use of the Bosch
After-Sales Service Organization, and may not be passed
on to third parties without our consent.

Microfilmed in the Federal Republic of Germany.
Microphotographié en République Fédérale d'Allemagne.

